

MODELS – TOOLING SYSTEM POLYURETHANE

page 1 of 3

DESCRIPTION

This system describes how a model (or plug) to produce a polyester mould and produced from a polyurethane tooling paste, may be coated with a high gloss two component polyurethane system.

PRINCIPAL CHARACTERISTICS

This system may be applied to a model (or plug) made from a polyurethane tooling paste cut and machined in the desired shape. The system is scratch resistant, and is resistant against various chemicals and solvents, including styrene. The system has an excellent gloss and colour retention.

SUBSTRATE CONDITIONS

Polyurethane tooling paste, sanded with grit paper P180, dry, free from any contamination and in good condition.

SURFACE PREPARATION

1. The surface should be completely dry and free from grease (moisture content maximum 12%);
2. Grit paper the surface with grit paper P180 after any spot repair;
3. Thoroughly remove all dust and residue from the surface.

MATERIALS AND SPREADING RATE

The following materials are used in the paint system:

Variopox Sealer	spreading rate approx. 0,2 l/m ²
IJmopox HB coating	spreading rate approx. 0,5 l/m ²
IJmopox Verdunner	spreading rate depends on application method
Double Coat	spreading rate approx. 0,2 kg/m ²
Double Coat Spuitverdunner	spreading rate depends on application method, see additional information

APPLICATION

1. Repair damaged areas and joints with a suitable filler (see additional information);
2. Apply one coat Variopox Sealer to a total dry film thickness of 200 µm (minimum spreading rate approx. 0,2 l/m², see additional information);
3. Apply three coats IJmopox HB coating to a total dry film thickness of 300 µm (minimum spreading rate approx. 0,5 l/m²). Apply preferably IJmopox HB coating in two different colours (see additional information);
4. Apply three coats Double Coat to a total dry film thickness of 90 µm (minimum spreading rate approx. 0,2 kg/m²);

ADDITIONAL INFORMATION

- Polyurethane tooling paste
Tooling pastes contain a high volume of extenders and fillers to improve sanding and cutting properties. The resistance to solvents (a.o. styrene) depends on the type and quality of the resins and the percentage and type of fillers and extenders. When there is doubt the tooling paste will resist the solvents used in the materials during the subsequent process thorough testing is recommended. In any case, the tooling paste should be resistant to:
 - The solvents used in the paint system applied to the tooling paste;
 - The solvents (a.o. styrene) of the gelcoat to be used in the production process of the mould.

This paint system is resistant to the most commonly used solvents in the polyester industry. When the tooling paste is not resistant to the solvents used in the paint system and/or the solvents used in the polyester industry, surface defects may occur during the production of the mould. These defects may be visible in both model and mould as spots with lower gloss, craters and cracks.

MODELS – TOOLING SYSTEM POLYURETHANE

page 2 of 3

- **Tg value tooling paste**
When the tooling paste has a Tg value lower than 45 °C we recommend to use conventional systems to produce the mould. Fast curing, rapid systems applied at a high film thickness will result in higher temperatures during curing. A surface temperature during curing above the Tg value of the tooling paste will cause deformation and as a consequence surface defects in the mould or model.
- **Durability and surface preparation**
The durability of any paint system depends on a number of variables, amongst others: total dry film thickness, method of application, skill of labour, the conditions during which the coating is applied and cured, the exposure conditions during service and the preparation of the surface. Insufficient surface preparation might lead to blistering and loss of adhesion.
- **Repair of tooling paste**
Damages to the tooling paste may be repaired with a filler. Any damage of the tooling paste should be repaired.
Suitable fillers are:
 - Variopox Fillers (no shrinkage, but restrictions to sanding);
 - Variobond (no shrinkage, but poor sanding properties);
 - Poltix Super Plamuur (grey, fast curing, easy to sand, slight shrinkage);
 - IJmofix (white, fast curing, fine filler, easy to sand, slight shrinkage);
- **Sanding**
A durable adhesion will be obtained by thorough preparation of the surface. This may be achieved by sanding the surface. Sanding is also necessary when the time between application of each coat exceeds the maximum overcoating interval.
During application of the finishing coats, we recommend to use a finer grit paper for each coat.
- **Application Variopox Sealer**
Variopox Sealer may be applied best using a felt roller such as supplied by Anza.
- **Application IJmopox HB coating**
IJmopox HB coating is best applied in two different colours. Change the colour between each layer and it is easier to control film thickness. During sanding of IJmopox HB coating it is clearly visible when too much material is removed.
- **Application of Double Coat**
Double Coat may be replaced with Double Coat Modellak. Double Coat Modellak is fully cured after 24 hours and is recommended when the model is exposed to the gelcoat the following day. Double Coat Modellak is fast curing and recommended for spray application to smaller models.
For spray Application Double Coat Spuitverdunner may be replaced by Double Coat Spuitverdunner 60. Depending on the model, Double Coat Spuitverdunner 60 will result in less overspray and better levelling.
- **Production of the mould**
The model (plug) should be allowed to cure at least 5 days after application of the final coat of Double Coat. Apply several layers of release agent; a suitable release agent is Mirroglaze TR88 or equivalent. Buff the release agent thoroughly.

MODELS – TOOLING SYSTEM POLYURETHANE

page 3 of 3

- Forced curing
Avoid forced curing of the paint system as much as possible. Forced curing might result in surface defects in the tooling paste. This will affect the surface quality of the mould negatively.
- Example working schedule

Step	Activity	Dry film thickness (µm)	Spreading rate (m ² /l)	Recoating interval at 20 °C	Preparation before next step
1	Surface pre-treatment				
2	Repair with suitable filler	n.a.	n.a.	8 hours	Sanding with P180.
3	Apply Variopox Sealer	200	5,0	24 hours	Sanding with P180.
4	Apply first coat IJmopox HB coating	100	7,0	12 hours	When recoated within 24 hours no preparation required, otherwise sanding with P240.
5	Apply second coat IJmopox HB coating	100	7,0	12 hours	
6	Apply third coat IJmopox HB coating	100	7,0	12 hours	Sanding with P320.
7	Apply first coat Double Coat	30	14,3	24 hours	When recoated within 48 hours no preparation required, otherwise sanding with P320-P400. Use between each layer finer grit paper to avoid scratches.
8	Apply second coat Double Coat	30	14,3	24 hours	
9	Apply third coat Double Coat	30	14,3	24 hours	

For detailed information on the products mentioned in this sheet, please refer to our technical information sheets.

Date: October 18

Disclaimer

The information in this data sheet is based on thorough research and development in combination with practical experience, is to the best of our knowledge and correct at the date of printing. De IJssel Coatings BV does not accept any liability as the final result depends on a number of factors beyond our control, amongst others, but not limited to, skill of labour, application conditions and surface preparation. De IJssel Coatings BV reserves the right to change data without prior notice. This data sheet supersedes all previous issues.